Course Information

PHYS 2126 PHYSICS LABORATORY II, SPRING 2022
Your first lab meeting is in the week of Monday Jan 24th.

Professor Contact Information

Instructor:	Lamya Saleh	Instructor:	Paul Mac Alevey
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Instructors will send e-mail to UTD e-mail addresses **only**.

Teaching Assistants: A teaching assistant (TA) will be assigned to each section of this course. The TA on your section will be directly in touch with you during the semester and available to answer your questions and address your concerns or personal issues. **TAs should be your first person to contact about PHYS 2126 questions, submissions or grades**. Contact information for TAs is posted on eLearning.
In case of any issue that cannot be resolved with your TA, you may contact one of the instructors on the class. Copy your TA on every email that you send to an instructor. Contact information for your TA is posted on eLearning.

Office hours: TAs will be assigned to this course and their office hours have yet to be arranged. **TAs should be your first person to contact about PHYS 2126**. Copy your TA on every email that you send to an instructor.

TA office hours are yet to be arranged but will be posted on coursebook as soon as they are available.
Office hours with Dr. MacAlevey are by appointment at SCI 3.168. Office hours with Dr. Lamya Saleh are by appointment on Blackboard collaborate.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Any student enrolling in this lab class should either have done or be doing PHYS 2326 (Electromagnetism & Waves), 1302 (College Physics II), PHYS 2422 or equivalent.

Course Description

The course includes experiments electrostatics, electricity in simple circuits, magnetism, and optics. As always in Physics, there is interplay between the theory that you see in a class and experimental work. One is not more important than the other but each informs the other: theoretical predictions are a natural focus of experiment and experimental results help to develop theory. That is why you need to study both. **Expect to see some topics for the first time in this lab course.**

Student Learning Objectives/Outcomes

The aims of the course are:

- Students will think critically & practice reasoning skills[1]
- Students will construct knowledge[2] themselves (rather than getting it from some authoritative source). This requires conducting their own experiments and using their observations to reach conclusions. Fitting curves to data will help analysis of data.
- Students will work in groups of three. This helps to include the thoughts & opinions of others in the course of reaching a scientific conclusion.
- Students will communicate their conclusions by means of written lab reports.
- Students learn to build scientific models[3] (by actually constructing one)

Required Textbooks and Materials

We use a manual that **will be posted on eLearning.**

Questions appear in both the Introduction (if there is one) and Instructions sections of the manual. Answers to questions from the Introduction will be your pre-lab. Answers to questions from the Instructions will be your report. Notice that there is no introduction for either electrostatics I or for electricity I and so there is no prelab due for either experiment. **All questions asked have corresponding answer spaces in the templates posted on eLearning.**

Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. **These materials may be downloaded during the course.** However, these materials are for registered students' use only. **Classroom materials may not be** reproduced or shared with those not in class, or **uploaded to other online environments** except to implement an approved Office of Student AccessAbility accommodation. **Failure to comply with these University requirements is a violation of the Student Code of Conduct**

Accommodations for Students Who Miss Class for Reasons Unrelated to COVID-19

Individual faculty maintain their discretion on whether and how to accommodate student absences unrelated to COVID-19.

Accommodations for Students Who Must Isolate or Quarantine Due to COVID-19

[1] For those that anticipate doing the MCAT exam, "Reasoning" is regarded as particularly important among the "Scientific Inquiry and Reasoning" skills given in the AAMC document https://www.aamc.org/students/download/374012/data/mcat2015-cp.pdf

2 Those that have read the recommendations of the American Association of Physics Teachers will recognize that this goal "captures some of the overarching goals of the undergraduate lab curriculum". (From http://www.aapt.org/Resources/upload/LabGuidlinesDocument_EBendorsed_nov10.pdf)

[3] This goal is mentioned in the AAPT document that is mentioned in footnote 1.

To keep the UT Dallas community as safe as possible, the University requires students who test positive for COVID-19 or who are close contacts as determined by the campus contact tracing program to isolate or quarantine as applicable. Faculty will be notified by the Dean of Students' Office if a student in their class has been required to isolate (positive case) or quarantine (exposed). **Students are reminded to use the online form to self-report COVID-19 positive results or exposures. Exceptions will only be made for Covid cases that are reported & verified by the dean of student's office.**

Suggested Course Materials

You should have a calculator (only be a 'scientific' one is ever needed), pencil and pen.

Sections & Meeting Times

section	days	times_12h	location
101	Monday	10:00am - 12:45pm	SCI 1.159
102	Monday	1:00pm - 3:45pm	SCI 1.169
103	Tuesday	10:00am - 12:45pm	SCI 1.159
104	Tuesday	1:00pm - 3:45pm	SCI 1.169
105	Tuesday	4:00pm - 6:45pm	SCI 1.169
106	Wednesday	10:00am - 12:45pm	SCI 1.169
107	Wednesday	1:00pm - 3:45pm	SCI 1.159
108	Thursday	10:00am - 12:45pm	SCI 1.179
109	Thursday	1:00pm - 3:45pm	SCI 1.159
110	Thursday	10:00am - 12:45pm	SCI 1.169
111	Tuesday	4:00pm - 6:45pm	SCI 1.159
112	Monday	4:00pm - 6:45pm	SCI 1.179
113	Monday	10:00am - 12:45pm	SCI 1.179
114	Monday	4:00pm - 6:45pm	SCI 1.159
115	Wednesday	10:00am - 12:45pm	SCI 1.179
116	Wednesday	1:00pm - 3:45pm	SCI 1.169
117	Tuesday	10:00am - 12:45pm	SCI 1.179
118	Tuesday	1:00pm - 3:45pm	SCI 1.179
119	Thursday	4:00pm - 6:45pm	SCI 1.169
120	Friday	10:00am - 12:45pm	SCI 1.159
121	Friday	10:00am - 12:45pm	SCI 1.169
122	Friday	1:00pm - 3:45pm	SCI 1.179
123	Friday	4:00pm - 6:45pm	SCI 1.179
124	Thursday	4:00pm - 6:45pm	SCI 1.179
125	Friday	4:00pm - 6:45pm	SCI 1.159

Academic Calendar/Schedule

While labs are online:

Reports, pre-labs & homework assignments will be submitted using a link on eLearning.

Pre-labs & homework assignments (if any) are due at time your section is scheduled to begin according to coursebook. Pre-labs from students in section 101 are due at 10:00 am on the Mondays listed in the schedule below. Pre-labs from students in 102 are due at 1:00 pm on Mondays. Pre-labs from students in 103 are due at 10:00 am on the Tuesday of the week listed in the schedule below etc. **There are no pre-labs for Electrostatics I or for Electricity I. There are only two homework assignments on the schedule below.**

Reports are due at midnight of the day on which your section meets according to coursebook. Reports from students in 101 and 102 are due on Midnight on Monday. Reports from students in 103, 104 and 105 are due on Midnight on Tuesday etc.
Data from each experiment will be posted in the manual on eLearning so that you can complete your report.

When labs are in-person:
Pre-labs & homework assignments (if any) are due at the beginning of your in-person lab meeting.
A Hard-copy of your report is due at the end of your in-person lab meeting.

Each row of the schedule below lists Mondays only. Sections that meet on the following Tuesday, Wednesday, Thursday and Friday will be doing the same experiment as the one listed for Monday.

Lab Week	Experiment
Week of Jan 17	*No labs scheduled this week*
Jan 24	Electrostatics I; Report due at midnight of the day on which your section meets according to coursebook. **All students do Electrostatics I remotely**. All materials needed are on the eLearning site in the folder called 'Manual' in the subfolder for Electrostatics I.
Week of Jan 31	Electrostatics II; Pre-Lab due at time your section is scheduled to begin according to coursebook. Report due at midnight of the day on which your section meets according to coursebook **All students do Electrostatics II remotely**. All materials needed are on the eLearning site in the folder called 'Manual' in the subfolder for Electrostatics II.
Week of Feb 7	Electricity I; Report due
Week of Feb 14	Electricity II; Pre-Lab & Report due
Week of Feb 21	Electricity III; Pre-Lab & Report due
Week of Feb 28	Electricity IV; Pre-Lab & Report due
Week of Mar 7	Electricity V; Pre-Lab & Report due

	Homework on 'Graphs & Trendlines' is *due. Use the link on eLearning to submit it.*
Week of Mar 14	***Enjoy Spring Break***
Week of Mar 21	Multimeters; Pre-Lab & Report due
Week of Mar 28	Ohm's law; Pre-Lab & Report due
Week of Apr 4	Geometric Optics; Report due
Week of Apr 11	**Homework on 'Analyzing a circuit' is *due. Use the link on eLearning to submit it.***
Week of Apr 18	*No labs scheduled this week*
Week of Apr 25	*No labs scheduled this week*
Week of May 2	*No labs scheduled this week*

Grading Policy

In previous semesters, then following scheme has been used for generating course grades. If x is a score, then

$x \geq 95$	A+	$70 > x \geq 65$	C+
$95 > x \geq 90$	A	$65 > x \geq 60$	C
$90 > x \geq 85$	A-	$60 > x \geq 55$	C-
$85 > x \geq 80$	B+	$55 > x \geq 50$	D+
$80 > x \geq 75$	B	$50 > x \geq 45$	D
$75 > x \geq 70$	B-	$45 > x \geq 40$	D-
		$40 > x$	F

eLearning calculates your grade as outlined above (dropping your lowest scores as in policy 2). Not attending the last lab of the semester can have a large effect on your grade. You can contact your TA to find out if they have finished grading so that eLearning will have the information needed to calculate your course grade. No grade is official unless given by Dr. Lamya Saleh or Dr. P. Mac Alevey at the end of the semester.

Course & Instructor Policies

1. Please contact the instructors if a question arises about these course policies. (TAs don't have permission to change these policies.)

2. Your grade is weighted as follows;

   i. The average of your grades on lab reports will contribute a maximum of 85% to your course grade. **eLearning will drop the report with the lowest percentage**.

   ii. The average of your grades on pre-labs & any homework will contribute a maximum of 15% to your course grade. **eLearning will drop the pre-lab or homework with the lowest percentage.**

When calculating your average results, **eLearning drops the lowest scores right from the beginning of the semester**. The grade on eLearning is not a predictor of your course grade if you don't submit work from the last lab.

3. Manuals are in an eLearning folder on the homepage called "Manual". This manual will contain a folder corresponding to each experiment on the schedule. The folder for each experiment will contain a description of the experiment, photos of apparatus and templates for reports and pre-labs (if due). Due dates for pre-labs, reports and homework assignments are given in the schedule above.

4. **Any work submitted for a grade must be written by the individual student named at the top of the work submitted. You must use your own voice to answer any question that is asked. No student is allowed to copy or paraphrase work from any other source and turn it in for a grade.** (See policy #9 for more on scholastic dishonesty.) Names & section numbers must appear on any work that is submitted in order that credit can be attributed properly. Your TA is free to insist on this when assigning a grade.

5. Each description of an experiment in the manual includes an *Introduction* and *Instructions*. **Questions that are asked (in bold unitalicized type) in the *Introduction* must be answered in your pre-lab. Questions that are asked (in bold unitalicized type) in the *Instructions* must be answered in your Report. Templates for pre-labs, reports and the homework assignments are posted on eLearning. The template that is posted must be used.** The amount of credit for each question is indicated in brackets after each question in the corresponding template.

6. **While labs are online:** Pre-labs & homework assignments (if any) are due at time your section is scheduled to begin according to coursebook. Data from each experiment will be posted in the manual on eLearning so that you can complete your report. Reports are due at midnight of the day on which your section meets according to coursebook.

   When labs are in-person: Pre-labs & homework assignments (if any) are due at the beginning of your in-person lab meeting**.** You will work through the section of the manual called *Instructions* during the lab meeting. Use the computers in the labs that are provided by UTD. No student of PHYS 2126 is allowed to use a phone, laptop, tablet or any device capable of communication in any the physics labs. **Remember to print the template before an in-person lab**: the 2126 labs don't have printers for you to use**.** Hard-copy reports are due at the end of your lab meeting.

7. **After we return to in-person classes, data will be made available for students that have been asked to isolate by the Dean of Students Office provided the Dean of Students office has verified the case and notified instructors. This data will allow you to write a report even though you can't be on campus**. **Use the online form to self-report COVID-19 positive results or exposures.**

8. **Any late work will only be accepted at the TA's/instructor's discretion.**

9. It is of great importance that others perceive your degree as having value. That value is diminished if it is suspected that a grade can be obtained through dishonest means. Academic dishonesty also gives a false picture of the capabilities of the individual that is being dishonest. In a wider context, it gives a false picture of what can be reasonably expected of students.

   In order to further the objective of eliminating scholastic dishonesty, the University has a student code of conduct at https://policy.utdallas.edu/pdf/utdsp5003. **Students enrolling in the course**

are bound by this policy. **Any suspected cases of scholastic dishonesty will be passed along to the Office of Community Standards and Conduct.**

10. **In the event of closure due to inclement weather:** check the UTD Web page http://www.utdallas.edu/ for notice of any unexpected closure of the university (in which case, lab will not meet). The university expects to post information about closures by 6:00 am on any day that classes are suspended. **After UTD has announced reopening** of the campus, **look for an *announcement on eLearning*** that will tell you about the schedule for this lab.

After UTD returns to in-person classes:

11. Experiments are to be done in **groups of three**. Your TA may ask any student to work with a different group so that groups will be roughly the same size (or for any other reason that the TA thinks appropriate).

12. **Attend the lab section for which you registered**.

13. There are two options if you miss an in-person lab;

    i. Do nothing and get a grade of zero for any pre-lab, homework assignment or report due at the lab meeting.

    ii. Try to arrange a makeup lab provided that no more than TWO meetings of your lab section have passed since your absence. (Suppose that your section is scheduled to meet on the 1st, 8th, 15th, etc. If you miss a lab that was scheduled on the 1st then you have until the 15th to make up the lab that you missed).

    - Identify a scheduled section of PHYS 2126 that you can attend. Use coursebook to find a section with fewer than 30 students if you can.

    - Email the TA **in charge of the lab section that you enrolled in to tell the TA why you were absent**. If your TA accepts your reason for not attending then they will reply to your email saying so. ***You must wait for this written reply.***

    - **Email the TA in charge of the section that you would like to attend and cc** (send a copy of the email to) **the TA in charge of the lab section that you enrolled in.** Ask if there is room for you to attend. If there is enough apparatus to accommodate you, then the **TA in charge that section will reply** saying that the change is possible. ***You must also wait for this written reply***.

    - **Turn-in any pre-lab or homework exercise that was due at the lab meeting that you missed. Give these to the TA in whose section you make-up the lab**. Both the name of your usual TA for PHYS 2126 and your section number must be on anything that you turn in.

    Make up any labs in the order in which they are presented in the manual. Please don't abuse this system. The guidance given to TAs is that a student **can only go to another section three times before instructors require formal documentation** (doctor's notes with verifiable contact information etc).

Preface And Its Implications

Please read the preface posted on eLearning before labs begin. No prior familiarity with physics labs is assumed. Ask questions during office hours before your lab meeting if needed.

Implications

I have found it to be useful to return right to the beginning of DC circuits and to take as little as possible for granted. Rather than tell you (again) how DC circuits work, I invite you to put things together for yourself. ***Please have patience with yourself: it is not easy to put ideas together if you haven't had to do this before. Some students find it hard to distinguish between things with which they are merely familiar*** *(because they heard about them somewhere)* ***and things that really make sense to them*** *(because they have made the necessary observations and have taken the time to find the implications of their observations).* This is just as true if the subject matter is dismissed as being 'simple'. I hope that learning the skill in this context will help you to put ideas together in other contexts later.

Make good use of ***office hours***. A quick ***question asked early*** is often all that is needed to make progress on a Pre-Lab. By all means, tell your TA or an instructor if you don't understand something. However, ***complete answers to questions are not helpful. It is important that you grapple with the questions yourself***. Expect any of us to ask you what you think (and why) before saying much more.

Beware of blindly following instructions in the manual. ***You are not being asked to follow a recipe so don't expect my instructions to be a detailed list of directions. Expect to have to read ahead and think about my instructions before doing anything.***

If a question asks you to explain something then an answer of "yes/no" or "I can't explain" is not sufficient. Don't move on until you find explanations for things. Please write neat answers for your TA. This should be easy for questions that involve simple observations or data items. ***For more complicated questions, consider writing your first answer on another piece of paper. Only write your answer on the Report that you'll give the TA after you have thought about your 'draft' answer and are sure that it answers the question that was asked***.

Format of Questions for Lab Reports.

I mentioned earlier that the format for reports is simple in PHYS 2126: you just write *answers to questions*. These questions are designed to lead you through the thought process that I'd lead you through if we were talking to each other. Some questions are about observations that you have made and are not difficult. However, the function of these questions is to remind you of something helpful just before I ask a more difficult question. This is the reason that marks offered for different questions vary so much.

I don't want to put words in your mouth while leading you through a thought process. In many instances I could be more specific in the way a question is asked but only at the cost of telling you the answer to a later question. This puts some limitations of the specificity of my questions.

The requirement that you learn actively means that I have to phrase my questions in terms I know that you are familiar with. Of course, it is easier to ask question when we have access to a set of well-defined & physically useful terms. Those terms will often be unavailable since we will be in the process of approaching an understanding of those useful terms!

At the same time, if you find a better way of asking a particular question then please email it to me.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.